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*Democracy Dies in Darkness*

## Climate Change Personified

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By Tim Flannery

### THE REVENGE OF GAIA

Earth's Climate Crisis & the Fate of Humanity

By James Lovelock

Basic. 177 pp. \$25

James Lovelock is famous for the hypothesis that Earth is a self-regulating entity, which he named Gaia, after the Greek earth goddess. But he admits that for a decade after he published "Gaia, a New Look at Life on Earth," he was uncertain about what precisely Gaia was. In his latest book, "The Revenge of Gaia," Lovelock provides an updated definition. Gaia is "a thin spherical shell of matter that surrounds [Earth's] incandescent interior; it begins . . . about 100 miles below the surface, and proceeds another 100 miles outwards through the ocean and air to the even hotter thermosphere at the edge of space."

Lovelock laments that our current knowledge of Gaia is not much better than that of a 19th-century physician examining a patient: We can recognize illness and suspect the existence of thresholds beyond which disease becomes deadly, yet the workings of the living body are largely hidden from us.

Gaia regulates its temperature and chemistry to keep conditions optimal for life, and, in Lovelock's eyes, that means keeping Earth cool. For land-based creatures, warmth may seem preferable -- after all, plant growth is optimized at around 75 degrees Fahrenheit -- but land-based life is the minority. The vast oceans are where most life resides, and marine life flourishes when the surface waters are below 45 degrees. That's why great whales abound in the frozen seas of the far north, while the warm central Pacific is one vast aquatic desert.

Lovelock's principal motivation in penning his latest work is not to better define Gaia (although he does that) but to warn us that, if nothing is done, Earth is on the brink of moving into a "hot state" -- and if it does, "most of us, and our descendants, will die" prematurely and needlessly. The cause of the heating, he writes, is the greenhouse gases released by our fossil-fuel-driven economy.

So yes, "The Revenge of Gaia" is another book about global warming. Yet this is a wondrous and novel essay, both for what it has to say and for the insight it affords into one of the most ingenious, if eccentric, minds of our age.

The warming that Lovelock fears will occur is far more dire than that projected by many other scientists; he believes it will be comparable to the prodigious heating that occurred 55 million years ago, except that today the sun is 0.5 percent hotter than it was then. As a result, he warns, the oceans will rise 80 vertical meters, almost all life in the oceans and tropics will be exterminated, and civilization will be reduced to places such as Baffin Island and the Antarctic Peninsula, whose climate will resemble that of Florida.

Lovelock sees Gaia as being "like an old lady who has to share her house with a growing and destructive group of teenagers. . . . If they do not mend their ways she will evict them." Lovelock himself is 87 years old, and he has little patience with the current human response to this overwhelming threat: "It is almost as if we had lit a fire to keep warm and failed to notice, as we piled on fuel, that the fire was out of control and the furniture had ignited." He remembers Europe in 1938, with its sense of teetering on the edge and nobody knowing what to do.

In this crisis, however, Lovelock believes he does know what must be done. And his prescription -- develop nuclear power as swiftly and effectively as possible -- will be shocking to some, as will his fearlessness about radiation. "One of the striking things about places heavily contaminated by radioactive nuclides is the richness of their wildlife," he proclaims. "The best sites for its disposal are the tropical forests and other habitats in need of a reliable guardian."

Meanwhile, his dismissal of geothermal energy, wind power and solar cells seems glib. Geothermal is too limited and solar too expensive, he argues, while wind just isn't up to the job. One suspects that Lovelock's dislike of wind-generated energy results from more than a practical objection: He seems upset by the aesthetic impact of wind farms on the English countryside:

"They no longer make hay in England's green and pleasant land, they farm by mechanized agribusiness; and if we allow it, the remaining countryside will become an industrial site filled with massive wind turbines in a vain attempt to supply the energy demands of urban life. Reform is all too often organized vandalism in the name of ideology. This marred Cromwell's government, and is now the dark side of European green politics."

Minor technical blemishes fail to tarnish this luminous, challenging and timely work. Because it is so full of vital and interesting facts, "The Revenge of Gaia" is essential reading for anyone interested in climate change. And whatever your politics, it's sure to offend.

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